



ULTRASONOGRAPHY FINDINGS OF SPONTANEOUS ABORTION, ECTOPICS AND SUSPECTED HYDATIFORM MOLE

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ABSTRACT

Vaginal bleeding in the first trimester of pregnancy is a common obstetric problem and is a cause of anxiety and worry both to patient and obstetrician. The causes of bleeding during first trimester include various types of abortions ectopic pregnancy and molar pregnancy. Clinical history and pelvic examination are inadequate in assessing the prognosis. We studied 50 cases of pregnant women who presented with bleeding per vaginam during the first trimester between January 2010 to July 2011. All patients were evaluated with clinical history, clinical examination, and ultrasonography. 48 out of 50 cases were correctly diagnosed on ultrasound compared to 18 out of 50 cases on clinical diagnosis with a disparity of 64%. 4 out of 5 proved ectopic pregnancies were correctly diagnosed both on clinical and ultrasound examination. Ultrasound is a non-invasive, non-ionizing, without any proven harmful effects on the developing fetus and easily available method of investigation to assess the patients with first trimester bleeding which is highly accurate in diagnosing the actual causes of bleeding and guides the clinician in choosing the appropriate line of management and prevents mismanagement of the cases.

INTRODUCTION

Vaginal bleeding in the first trimester of pregnancy is a common obstetric problem and is a cause of anxiety and worry both to patient and obstetrician [1]. The causes of bleeding during first trimester include various types of abortions ectopic pregnancy and molar pregnancy [2]. Clinical history and pelvic examination are inadequate in assessing the prognosis. The term abortion is defined as expulsion of products of conception whether it is spontaneous or induced before twenty eight weeks of gestation, after which the fetus is considered to be viable. The definition has undergone modifications in some western countries, with the availability of modern methods and equipment in neonatology intensive care units [3].

With these modern facilities, it is possible to save the fetus after twenty weeks of gestation or if it weighs more than 500 grams. In these countries, abortion is termination of pregnancy before twenty weeks. Sonographic findings depend on the stage of gestation and may show an empty uterus or intrauterine GS with or without an embryo [4].

The findings at ultrasound examination in patients with threatened abortion are often both crucial and pivotal because in most cases the sonographic findings not only can determine the precise diagnosis but can also be used to guide therapy [5].

In complete molar pregnancy, trophoblastic hyperplasia occurs with absence of identifiable embryo and amniotic membrane. Approximately 90% of molar pregnancies are this type.

In partial form the hydatidiform changes are focal and affect only a variable portion of the placenta. An abnormal placenta may co-exist.

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METHODOLOGY

We studied 50 cases of pregnant women who presented with bleeding per vaginum during the first trimester between January 2010 to July 2011. The main source of data for this study were women who presented with bleeding per vaginum in the first trimester of pregnancy to department of radio diagnosis, Navodaya medical college Raichur. All patients were evaluated with clinical history, clinical examination, and ultrasonography. Ultrasonographic examination was done using following machines.

1. Esoate Megas GPX 570FD MK II
2. L & T Medical Sonalisa 32
3. GE LOGIQ α -200

Patients presenting anywhere from first day of last menstrual cycle to 12 weeks of pregnancy with complaints of bleeding per vaginum are included in study. Women of reproductive age with a missed period but negative urine pregnancy test and patients who refused to get admit to the hospital, all non-obstetrical causes of vaginal bleeding and all patients with more than 12 completed weeks of gestation were excluded from the study.

RESULTS

Table 1. Follow up of cases diagnosed clinically

Case	No. of cases clinically diagnosed	Follow up and results
Threatened Abortion	26	Out of 26 cases 12 cases – normal pregnancy 5 cases – IA 4 cases – CA 2 cases – in A 1 case – MA 1 cases – HM 1 cases – AG
Ectopic Gestation	4	Out of 4 cases all 4 cases were correctly diagnosed
Incomplete Abortion	16	Out of 16 cases 5 cases – IA 3 cases – TA 3 cases – CA 2 cases – MA 1 case – In A 1 case – EG 1 case - AG
Inevitable Abortion	2	1 case – In A 1 case – IA
Missed Abortion	1	1 case – MA
Hydatidiform mole	1	1 cases – HM

In the present study follow up of clinically diagnosed cases showed out of 26 cases of suspected threatened abortion, only 18 cases were confirmed on sonography out of which 12 cases continued to term gestation. 5 cases of incomplete abortion were misdiagnosed as threatened abortion. 4 cases of clinically diagnosed threatened abortion turned out to be complete abortion. 2 cases of inevitable abortion and one case each of missed abortion, HM and an embryonic gestation were misdiagnosed as threatened abortion. Out of 16 cases of

incomplete abortion which were diagnosed clinically, only 5 were confirmed. 3 cases of missed abortion and threatened abortion were misdiagnosed as incomplete abortion. 2 cases of missed abortion and 1 case each of inevitable abortion, ectopic and an embryonic gestation were misdiagnosed as incomplete abortion clinically. One case each of inevitable abortion, missed abortion and Hydatidiform mole were correctly diagnosed clinically. Of the 4 clinically suspected ectopic pregnancies, were confirmed on ultrasound.

Table 2. Follow up of cases diagnosed on USG

Case	No. of cases sonographically diagnosed	Follow up and results
Threatened Abortion	18	12 cases of TA were continued as normal pregnancy 2 cases presented with missed abortion 2 cases presented with incomplete abortion 2 cases presented with complete abortion.



Ectopic Gestation	4	Out of 4 cases all 4 cases were correctly diagnosed
Complete Abortion	6	5 cases were diagnosed correctly 1 case was misdiagnosed as EG.
Incomplete Abortion	10	All 10 cases were correctly diagnosed as TA
Inevitable Abortion	4	All cases correctly diagnosed
Missed Abortion	4	All cases were correctly diagnosed
Hydatidiform mole	2	Both cases were correctly diagnosed
Anembryonic gestation	2	Both cases were correctly diagnosed

As shown in the above table, on follow-up of sonologically diagnosed cases, out of 18 cases of threatened abortion 12 cases continued to normal term gestation while 6 cases present with miscarriage. On repeat ultrasound, out of these 6 cases, 2 were missed abortion, 2 incomplete abortion and 2 cases with complete spontaneous abortion. All 4 cases of ectopic gestation were correctly diagnosed on ultrasound. Of the 6 cases of sonologically diagnosed complete abortion, only 5 were correctly diagnosed whereas one case of ectopic gestation was misdiagnosed as complete abortion. 10 case of incomplete abortion, 4 cases of inevitable abortion, 4 cases of missed abortion, 2 cases of HM and 2 cases of

anembryonic gestation were all correctly diagnosed on Ultrasound.

We have divided our study group into 3 main categories for the purpose of statistical correlation. The 3 groups are:

1. Viable intrauterine pregnancies
2. Nonviable intrauterine pregnancy
3. Ectopic pregnancy/gestation

The groups were formed on the basis of the subsequent line of management in the particular cases. All cases of viable intrauterine pregnancies were to be followed up without intervention; while other cases were managed as appropriate based on the ultrasound findings.

Table 3. Correlation of Clinical diagnosis with Final diagnosis- an observation

Parameters	True positive	False Positive	False negative	True negative
Viable intrauterine pregnancy	15	11	3	21
Nonviable intrauterine pregnancy	16	4	11	19
Ectopic Pregnancy	4	0	1	45

Table 4. Correlation of Clinical diagnosis with Final diagnosis- an evaluation

Parameters	Sen.	Sp	PPV	NPV	Accuracy	P value
Viable intrauterine pregnancy	83.33	65.65	57.69	87.50	72.00	<0.001**
Nonviable intrauterine pregnancy	59.28	82.61	80.00	63.33	70.00	0.003**
Ectopic Pregnancy	80.00	100.00	100.0	97.83	98.00	<0.001**

15 out of 50 cases of suspected viable intrauterine gestation on clinical examination were confirmed whereas it has got high false positive cases (n=11). This shows a sensitivity of 83.33%, specificity 65.65%, PPV of 57.69% and accuracy of 72.0% with significant p value (<0.001). Of the 4 ectopic pregnancies diagnosed clinically, all were confirmed with specificity of 100% and PPV of 100%. 1

case of ectopic pregnancy not diagnosed clinically turned out to be ectopic with sensitivity of 80%, NPV of 97.83% and accuracy of 98% with a significant p value (<0.001). In diagnosing nonviable pregnancies, clinical diagnosis has got very poor statistical correlation with a sensitivity of 59.28%, specificity of 82.61%, NPV 63.33% and accuracy of 70%. This shows p value of 0.003.

Table 5. Correlation of USG diagnosis with Final diagnosis- an observation

Parameters	True positive	False Positive	False negative	True negative
Viable intrauterine pregnancy	18	0	0	32
Nonviable intrauterine pregnancy	27	1	0	22
Ectopic Pregnancy	4	0	1	45

Table 6. Correlation of USG diagnosis with Final diagnosis- an evaluation

Parameters	Sen.	Sp	PPV	NPV	Accuracy	P value
Viable intrauterine pregnancy	100.00	100.00	100.00	100.00	100.00	<0.001**
Nonviable intrauterine pregnancy	100.00	95.65	96.43	100.00	98.00	<0.001**
Ectopic Pregnancy	80.00	100.00	100.00	97.83	98.00	<0.001**



In present study, 18 cases of viable intrauterine pregnancies were correctly diagnosed on ultrasound with zero false positive and zero false negativity with sensitivity, specificity, PPV, NPV and accuracy of 100% each. 80% of ectopic pregnancies were correctly diagnosed with a specificity and PPV of 100 % whereas 1 case was missed on sonography with a sensitivity of 80% and NPV of 97.83% with an accuracy of 98%.

Of the nonviable pregnancies diagnose on ultrasound were confirmed with a sensitivity and NPV of 100% whereas 1 case of false positive complete abortion was made on ultrasound with a specificity of 95.65%, PPV of 96.43% and accuracy of 98%.

Ultrasound diagnosis proved to be very accurate on statistical evaluation with a very significant p value of <0.001.

Table 7. Correlation of Clinical diagnosis with USG diagnosis- an observation

Parameters	True positive	False Positive	False negative	True negative
Viable intrauterine pregnancy	15	11	3	21
Nonviable intrauterine pregnancy	16	4	12	18
Ectopic Pregnancy	3	1	1	45

Table 8. Correlation of Clinical diagnosis with USG diagnosis- an evaluation

Parameters	Sen.	Sp	PPV	NPV	Accuracy	P value
Viable intrauterine pregnancy	83.33	65.63	57.69	87.50	72.00	<0.001**
Nonviable intrauterine pregnancy	57.14	81.82	80.00	60.0	68.00	0.052+
Ectopic Pregnancy	75.00	97.00	75.0	97.83	96.00	<0.001**

In present study, when compared to the ultrasound diagnosis, clinical diagnosis has true positive of 15, false positive of 11 and true negative of 21 in diagnosis viable pregnancies that constitutes threatened abortion . Clinical diagnosis has high false negative and true negative in diagnosing non viable intrauterine pregnancies. Our study has a sensitivity of 83.3, PPV of 57.7 and accuracy of 72% in diagnosing viable pregnancies with a very significant p value (< 0.001).

Clinical diagnosis of ectopic pregnancy has good specificity (97.93%), NPV (97.83%) and accuracy (96%) with p value < 0.001 which is very significant. Clinical diagnosis has got very poor statistical correlation when compared to ultrasound diagnosis in evaluating non viable intrauterine pregnancies with a sensitivity of 57.14 %, NPV of 60% and accuracy 68.0 % which shows a p value of 0.052. This data shows that ultrasound diagnosis is considerably more accurate than clinical diagnosis.

DISCUSSION

Table 9. Showing comparison of frequency of occurrence of outcomes after ultrasound for bleeding in first trimester

Study	Viable	Nonviable
Hertz et al. in 1980 [6]	0.58	0.42
Nyberg et al. in 1986 [2]	0.44	0.52
Stabile et al. in 1986 [7]	0.64	0.36
Charles W Schauburger et al. in 2005 [8]	0.44	0.33
Present study	0.36	0.64

In our study, 18 cases of threatened abortion were diagnosed on ultrasound based on viability of fetus corresponding to 36% of cases of First trimester bleeding. Our study is comparable to Nyberg et al. and Charles W Schauburger et al.

Missed abortion	50	100	100
Incomplete abortion	50	100	100
Blighted ovum	100	0	100
Ectopic pregnancy	87.5	-	80
H. mole	100	100	100
Inevitable abortion	100	-	100
Complete abortion	-	-	83

In our study, all cases of threatened abortion, missed abortion, incomplete abortion, blighted ovum, H Mole and inevitable abortion were diagnosed correctly on ultrasound with an accuracy of 100%. 1 out of 5 cases of ectopic pregnancy and 1 out of 6 complete abortions were misdiagnosed with accuracy of 80 and 83% respectively. The results of present study are comparable with Rama Sofat and Neelam SB in diagnosing threatened abortion, missed abortion, blighted ovum and H Mole with 100% accuracy.

Table 10. Comparison of USG accuracy with some of the studies available

Causes of bleeding	Study of Rama Sofat	Study Of Neelam SB	Present study
Threatened abortion	95.5	98.2	100



CONCLUSION

Clinical history and pelvic examination are inadequate in assessing the cause and the prognosis. Ultrasound can assess some findings which are helpful in predicting the prognosis of the pregnancy.

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CONFLICT OF INTEREST: Nil

STATEMENT OF HUMAN AND ANIMAL RIGHTS

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

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